EXAMINATION OUTLINES AND NRC COMMENTS

FOR THE BRAIDWOOD INITIAL EXAMINATION - JULY 2002

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BW020023

James E. Dyer
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Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

Subject: Submittal of Integrated Initial License Training Examination Outline

Enclosed are the examination outlines, supporting the Initial License Examination scheduled for the weeks of July 8, 2002, through July 19, 2002, at Braidwood Station.

This submittal includes all appropriate Examination Standard forms and outlines in accordance with NUREG-1021, "Operator Licensing Examination Standards," Revision 8, Supplement 1.

In accordance with NUREG 1021, Revision 8, Supplement 1, Section ES-201, "Initial Operator Licensing Examination Process," please ensure that these materials are withheld from public disclosure until after the examinations are complete.

Should you have any questions concerning this letter, please contact Amy Ferko, Regulatory Assurance Manager, at (815) 417-2699. For questions concerning examination outlines, please contact Mark Olson at (815) 458-7829.

Respectfully,

James D. von Suskil
Site Vice President
Braidwood Station

APR 02 2002

Enclosures: (Hand delivered to Mike Bielby, Chief Examiner, NRC Region III)

Examination Security Agreements (Form ES-201-3)
Administrative Walk-Through Job Performance Measures Sample Plan (Form ES-301-1)
Control Room Systems and Facility Walk-Through Test Outline (Form ES-301-2)
SRO Written Exam Sample Plan (Forms ES-401-1 *or* ES-401-3 and ES-401-5)
RO Written Exam Sample Plan (Forms ES-401-2 *or* ES-401-4 and ES-401-5)
Operational Scenarios Sample Plan (Form ES-D-1)
Record of Rejected K/As (Form ES-401-10)
Completed Checklists:
- Examination Outline Quality Checklist (Form ES-201-2)
- Transient and Event Checklist (Form ES-301-5)

cc: (without attachments)
Chief, NRC Operator Licensing Branch
NRC Senior Resident Inspector - Braidwood Station

Facility: **BRAIDWOOD** Date of Examination: **07/8-19/02**

Item	Task Description	Initials a	b*	c#
1. WRITTEN	a. Verify that the outline(s) fit(s) the appropriate model per ES-401.	MD	TD	MGS GP
	b. Assess whether the outline was systematically and randomly prepared in accordance with Section D.1 of ES-401 and whether all KA categories are appropriately sampled.	MD	TD	MGS GP
	c. Assess whether the outline over-emphasizes any systems, evolutions, or generic topics.	MD	TD	MGS GP
	d. Assess whether the justification for deselected or rejected K/A statements are appropriate.	MD	TD	MGS GP
2. SIM	a. Using Form ES-301-5, verify that the proposed scenario sets cover the required number of normal evolutions, instrument and component failures, and major transients.	MD	TD	MGS GP
	b. Assess whether there are enough scenario sets (and spares) to test the projected number and mix of applicants in accordance with the expected crew composition and rotation schedule without compromising exam integrity; ensure each applicant can be tested using at least one new or significantly modified scenario, that no scenarios are duplicated from the applicants' audit test(s)*, and scenarios will not be repeated over successive days.	MD	TD	**
	c. To the extent possible, assess whether the outline(s) conform(s) with the qualitative and quantitative criteria specified on Form ES-301-4 and described in Appendix D.	MD	TD	MGS GP
3. W/T	a. Verify that: (1) the outline(s) contain(s) the required number of control room and in-plant tasks, (2) no more than 30% of the test material is repeated from the last NRC examination, (3)* no tasks are duplicated from the applicants' audit test(s), and (4) no more than 80% of any operating test is taken directly from the licensee's exam banks.	MD	TD	**
	b. Verify that: (1) the tasks are distributed among the safety function groupings as specified in ES-301, (2) one task is conducted in a low-power or shutdown condition, (3) 40% of the tasks require the applicant to implement an alternate path procedure, (4) one in-plant task tests the applicant's response to an emergency or abnormal condition, and (5) the in-plant walk-through requires the applicant to enter the RCA.	MD	TD	GP MGS
	c. Verify that the required administrative topics are covered, with emphasis on performance-based activities.	MD	TD	GP MGS
	d. Determine if there are enough different outlines to test the projected number and mix of applicants and ensure that no items are duplicated on successive days.	MD	TD	GP MGS
4. GENERAL	a. Assess whether plant-specific priorities (including PRA and IPE insights) are covered in the appropriate exam section.	MD	TD	GP MGS
	b. Assess whether the 10 CFR 55.41/43 and 55.45 sampling is appropriate.	MD	TD	GP MGS
	c. Ensure that K/A importance ratings (except for plant-specific priorities) are at least 2.5.	MD	TD	GP MGS
	d. Check for duplication and overlap among exam sections.	MD	TD	GP MGS
	e. Check the entire exam for balance of coverage.	MD	TD	GP MGS
	f. Assess whether the exam fits the appropriate job level (RO or SRO).	MD	TD	GP MGS

	Printed Name / Signature	Date
a. Author	MARK G. OLSON / Mark G. Olson	3/21/02
b. Facility Reviewer (*)	TERRY D'ORAZIO / Terry D'Orazio	3/21/02
c. NRC Chief Examiner (#)	Michael E. Bielby / Michael E. Bielby for B Palagi B Palagi 5/22/02	3/29/02
d. NRC Supervisor	David E. Hills / David E Hills	4/2/02

NOTE: * Not applicable for NRC-developed examinations.
Independent NRC Reviewer initial items in Column "c'" chief examiner concurrence required.

** Will verify after audit tests administered MGS 3/29/02

Facility: **Braidwood Units 1 and 2** Date of Examination: **07/08-19/02**

Examination Level (circle one): **SRO** Operating Test Number: **1**

	Administrative Topic/Subject Description	Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Conduct of Operations- Review Calorimetric	S-42 (Modified Simulator JPM) K/A 2.1.7 Imp Factor 4.4
	Conduct of Operations- Review QPTR Calculation	(new) (Simulator JPM) K/A 2.1.33 Imp Factor 4.0
A.2	Equipment Control- Review BDPS Out of Service	(new) (Simulator JPM) K/A 2.2.13 Imp Factor 3.8
A.3	Radiation Control- Review a Release Package	S-41 (Modified Simulator JPM) K/A 2.3.6 Imp Factor 3.1
A.4	Emergency Plan- Classify and Screen Event for Reportability	S-05 (Simulator JPM) K/A 2.4.30 Imp Factor 3.6

Facility: **Braidwood Units 1 and 2** Date of Examination: **07/08-19/02**

Exam Level (circle one): **SRO** Operating Test Number: **1**

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
a. ECCS / Increase SI Accumulator Pressure N-03 K/A 006A4.02 4.0/3.8	D, S L	3
b. EDG / Synchronize a SAT to a bus being fed by a Diesel N-84 K/A 064A4.09 3.2/3.3	D, S L	6
c. Emergency Boration / Perform Emergency Boration N-27C K/A 024AA1.17 3.9/3.9	M, A S, L	1
d. RCS / Excess Letdown Operations (new) K/A 002K1.06 3.7/4.0	N, A S	2
e. CCW / Respond to a RCP Thermal Barrier Leak N-118 K/A 008K1.04 3.3/3.3	D, A S	8
f. PRT/ Drain the Pressurizer Relief Tank N-119 K/A 007A1.01 2.9/3.1	D, S	5
g. SG / AFW Check Valve Leakage (new) K/A 035K1.01 4.2/4.5	N, A, S	4p

B.2 Facility Walk-Through

a. ESW / Align Fire Protection Cooling to CV Pump after loss of SX N-138 K/A 076AK3.03 4.0/4.2	N, R	4s
b. APE / Locally Align the Fire Hazzards Panel N-34 K/A 068AA1.03 4.1/4.3	D, R	7
c. ESF / Locally Reset Feedwater Isolation N-91 K/A 013A4.02 4.3/4.4	D	2

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow Power, (R)CA

Facility: **Braidwood Units 1 and 2** Date of Examination: **07/08-19/02**

Examination Level (circle one): **RO** Operating Test Number: **1**

	Administrative Topic/Subject Description	Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Conduct of Operations- Perform Unit Common Shiftly Daily Rounds	(new) (Simulator JPM) K/A 2.1.18 Imp Factor 2.9
	Conduct of Operations- Perform QPTR Calculation	N-18 (Simulator JPM) K/A 2.1.19 Imp Factor 3.0
A.2	Equipment Control- Perform 1CS007A Valve Stroke Surveillance	(new) (Simulator JPM) K/A 2.2.12 Imp Factor 3.0
A.3	Radiation Control- Perform RM-11 Setpoint Change for Rad Release	N-32 (Simulator JPM) K/A 2.3.11 Imp Factor 2.7
A.4	Emergency Plan- Activate Emergency Response Data System (ERDS)	N-160 (Simulator JPM) K/A 2.4.29 Imp Factor 2.6

Facility: **Braidwood Units 1 and 2** Date of Examination: **07/08-19/02**

Exam Level (circle one): **RO** Operating Test Number: **1**

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
a. ECCS / Increase SI Accumulator Pressure N-03 K/A 006A4.02 4.0/3.8	D, S L	3
b. EDG / Synchronize a SAT to a bus being fed by a Diesel N-84 K/A 064A4.09 3.2/3.3	D, S L	6
c. Emergency Boration / Perform Emergency Boration N-27C K/A 024AA1.17 3.9/3.9	M, A S, L	1
d. RCS / Excess Letdown Operations (new) K/A 002K1.06 3.7/4.0	N, A S	2
e. CCW / Respond to a RCP Thermal Barrier Leak N-118 K/A 008K1.04 3.3/3.3	D, A S	8
f. PRT/ Drain the Pressurizer Relief Tank N-119 K/A 007A1.01 2.9/3.1	D, S	5
g. SG / AFW Check Valve Leakage (new) K/A 035K1.01 4.2/4.5	N, A, S	4p
B.2 Facility Walk-Through		
a. ESW / Align Fire Protection Cooling to CV Pump after loss of SX N-138 K/A 076AK3.03 4.0/4.2	N, R	4s
b. APE / Locally Align the Fire Hazzards Panel N-34 K/A 068AA1.03 4.1/4.3	D, R	7
c. ESF / Locally Reset Feedwater Isolation N-91 K/A 013A4.02 4.3/4.4	D	2

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow Power, (R)CA

Simulation Facility Braidwood Scenario No. 1 Operating Test No. 2002

Examiners: _____ Applicant: _____ SRO

_____ _____ RO

_____ _____ BOP

Initial Conditions: IC __ , 90% power, BOL, equilibrium Xenon, steady state

Turnover: 90% power, steady state operating conditions. 1A CS Pump is OOS for a motor bearing replacement. 1D CD/CB pump is OOS for an alignment and vibration problem. Load was reduced from 100% power due to CB pump suction strainer delta-p. Further load reduction is anticipated to allow isolating and flushing of the 1C CB Pump suction strainer.

Event No.	Malf. No.	Event Type*	Event Description
Preload	RP01 CS01A FW22D	M RO SRO BOP	Failure of RTB A&B to auto AND manual open. (can be opened locally) 1A CS pump OOS Failure of CS and Phase B to Actuate on Hi-3 Cnmt Press. Train B must be manually started from the MCR 1D CD/CB pump OOS
Preload	(preload note)	C RO SRO	1SI8801A will not auto open nor open from the MCB 1SI8801B will not open automatically. Will open manually from MCB
1		N BOP SRO	Ramp down turbine power to 900 Mwe at directed MW/min
		R RO SRO	Lower reactor power using rods and/or boration.
2	NI09A	I RO SRO	Power Range N-41 fails high.
3	FW22B	C BOP SRO	Trip of 1C CD/CB Pump. Standby CD/CB Pump not available
4	RD09, 1	C RO SRO	Automatic rod motion fails at 1 step per minute.
5	RX03E, 4.8	I BOP SRO	Steam Flow Transmitter FT-532 (input to controlling channel) fails high.
6	RPO2A,B	M RO BOP SRO	Reactor Trip Breakers fail to open / ATWS
7	THO6	M RO BOP SRO	Large Break LOCA inside containment. Leads to high-3 containment pressure
8	(OR) CS01B MRF RP63	C BOP RO SRO	Failure of CS to auto actuate.

*(N)ormal, (R)eactivity (I)nstrument, (C)omponent, (M)ajor Transient

SCENARIO OVERVIEW

The Unit 1 is at 90% power. 1D CD/CB pump is OOS for alignment and vibration problems. 1A CS Pump is OOS for a motor bearing replacement. Power was recently decreased from 100% due to CB Pump suction strainer delta-p problems. Further load decrease will be required to isolate the running CD/CB pump and flush the suction strainer.

Following clearly observable plant response from the reactivity changes, Power Range Nuclear Instrument N-41 will fail high causing a demand for inward rod motion. The crew will diagnose the PR failure and perform actions of 1BwOA INST-1, "NUCLEAR INSTRUMENTATION FAILURE- Attachment A," to defeat the channel and restore Tave=Tref. The SRO will review TS and direct tripping of the associated bistables.

After completion of the actions specified in 1BwOA INST-1 the 1B CD/CD pump will trip on overcurrent. The Crew will enter 1BwOA SEC-1, "SECONDARY PUMP TRIP", and commence a runback to reduce load to within the capacity of the remaining two CD/CB pumps (~700 Mwe). Rod Control is failed such that any auto rod motion will occur only at 1 step per minute, which is less than the expected minimum rod speed for the temperature transient in progress. The crew may elect to perform steps of 1BwOA ROD-1, "UNCONTROLLED ROD MOTION", but it is NOT required. Rod Control will be shifted to manual to match Tave and Tref at the new lower value.

Following completion of actions for the CD/CB pump and rapid load reduction, the 1C S/G selected steam flow channel will fail high, resulting in indications of increased steam flow and initial opening of 1C S/G feed reg valve to attempt to match feed flow with steam flow. An equilibrium level should be reached if manual control of the feed reg valve is not expeditiously taken. The crew will perform the actions of 1BwOA INST-2, "FAILED INSTRUMENT CHANNEL- Attachment H".

After the unit is stablilzed following the SF channel malfunction, a large break LOCA of 50,000 gpm occurs, increasing to 400,000 gpm over 2 minutes. The size of the LOCA will result in an automatic SI actuation and lead to the discovery of the failure of the reactor to automatically trip. 1BwFR S.1, "RESPONSE TO NUCLEAR POWER GENERATION / ATWS" will be entered. After dispatching an operator to locally trip Unit 1 reactor, the reactor trip breakers will be opened only after placing the steam dumps in Off/Reset per step 7 of BwFR S.1.

Following the safety injection actuation, cold leg injection valves 1SI8801A&B will fail to open. 1SI8801B must be opened manually from the MCB.

CS will fail to automatically occur at the high-3 pressure setpoints. Manual action by the crew will be required to actuate train B of CS, either while performing the actions of 1BwEP-0 or the SRO may elect to perform 1BwFR Z.1, "RESPONSE TO HIGH CONTAINMENT PRESSURE"
The scenario ends with completion of step 6 in 1BwEP ES-1.3

Critical Tasks

1. FR-S.1	Insert negative reactivity into the core by at least one of the following methods before completing step 4 of FR-S.1: • Manually insert RCCA's • Emergency boration flow to the RCS established
2. EP-0--I	Manually initiate high head injection flow via 1SI8801B before exiting 1BwEP-0
2. EP-0--E:	Manually actuate at least the minimum required compliment of containment cooling equipment before an extreme (red path) challenge develops to the containment CSF

Facility:	Braidwood	Scenario No.:	2	Op-Test No.:	
Examiners:		Operators:			SRO
					RO
					BOP

Initial Conditions: IC-21; 100% power, BOL, equilibrium Xenon, steady state, 1B Diesel Generator OOS, 1C HD pump OOS, U-2 SAC OOS.

Turnover: 100% power, BOL, equilibrium Xenon, steady state. The 1B Diesel Generator is OOS for replacement of Turbo Charger. The DG has been OOS for 18 hours and is expected to be returned to service by the end of the shift. 1C Heater Drain Pump is OOS for motor bearing replacement. Unit 2 SAC is OOS for an oil change and is expected to be returned to service by the end of the shift. The 1B CCW Pump is running for ASME testing. A tube leak being trended on the 1C SG has increased over the last hour and has been confirmed at 5 gpm requiring a unit shutdown.

Event No.	Malf. No.	Event Type*		Event Description
Preload	RF EG09 MAINT_O			1B DG OOS
Preload	Preload - TH03C		RO BOP SRO	Steam Generator 1C Tube Leak (5 gpm)
1		N R	BOP SRO RO	Reduce Turbine Load for Unit Shutdown due to SG leakage > Tech Spec Lower reactor power using rods and/or boration
2	RX18A	I	RO SRO	1A RCS loop Tcold RTD failed High
3	EG03	C	BOP SRO	Voltage Regulator malfunction Field Forcing
4	RX06K	I	BOP SRO	Steam Generator 1C controlling level channel 1LT539 Failed High on a 3 sec ramp.
5	CV01A	C	RO SRO	Centrifugal Charging Pump Trip
6	TH03C	M	RO BOP SRO	Steam Generator 1C Tube Rupture (460 gpm)
7	ED11A	C	RO BOP SRO	Loss of Instrument Bus 111 coincident with Reactor Trip
8	RF RP84 RP15D	C	RO BOP SRO	1B SI Pump fails to start automatically, Manually start an SI pump and Manually Align train A ECCS for Injection due to failure to auto start from loss of instrument bus 111

*(N)ormal, (R)eactivity (I)nstrument, (C)omponent, (M)ajor Transient

SCENARIO 02-2 OVERVIEW

The unit is at 100% power, BOL, equilibrium Xenon, steady state. The 1B Diesel Generator is OOS for Turbo Charger replacement. The Diesel Generator has been OOS for 18 hours and is expected to be returned to service by the end of the shift. 1C Heater Drain Pump is OOS for motor bearing replacement. Unit 2 SAC is OOS for an oil change and is expected to be returned to service by the end of the shift.

A known steam generator tube leak on the 1C S/G has just been confirmed to have increased beyond that allowed for continued plant operations and a unit shutdown has been ordered at 5 MW/min. A unit shutdown will be commenced in accordance with 1BwOA SEC-8 step 10 and Tech Spec 3.4.13, "Operational Leakage".

Once the ramp has been initiated a failure of the 1A Tcold narrow range RTD instrument high will occur. The US will enter BwOA INST-2 for the failed Nuclear Instruments. The crew should identify the failed Tcold instrument by abnormal rod motion and place rod control in manual. The crew should identify bistables to be tripped within 6 hours for the failed RTD channel.

After an adequate power change is observed and the actions for failed RTD are completed, a Voltage Regulator malfunction will result in field forcing. The BwOP should take the Voltage Regulator to OFF and use the Base Adjuster to reduce Exciter field current to less than 100 amps. The Voltage Regulator should remain OFF and control will be manual operation of the Base Adjuster to control main generator voltage.

After the actions for the Voltage Regulator failure are complete, 1C Steam Generator Level Channel 1LT-539 will fail high causing 1FW530 (1C FRV) to close. The BOP will take manual control of the 1C FRV and restore feedwater flow to normal. The US will enter BwOA INST-2 and direct actions for failed SG Level channel and establish normal automatic steam generator level control.

After actions are complete for the level channel failure, the 1A CV pump will trip. The operators will perform actions to isolate letdown, then restore charging and restore letdown IAW 1BwOA PRI-15, "LOSS OF NORMAL CHARGING"

After the actions are complete for the CV pump trip, the 1C S/G tube leak will increase to 460 gpm requiring a Reactor Trip and Safety Injection. Coincident with the reactor trip and safety injection a fault of instrument bus 111 will result in de-energization of the bus. The crew will enter 1BwEP-0 and manually align A train of ECCS due to the de-energized instrument bus. The 1B Safety injection pump will fail to auto start and the crew will take actions to manually start 1A and 1B SI pumps.

The US will transition to 1BwEP-3 at step 28 of 1BwEP-0. The crew should take actions of 1BwEP-3 to stabilize the plant by cooling down and depressurizing the RCS.

Completion criteria is the performance of 1BwEP-3 through ECCS termination step 21.

Critical Tasks

1. E-3--A: Isolate feedwater flow into and steam flow from the ruptured S/G before transition to ECA-3.1 occurs.
2. E-3--B: Establish/maintain RCS temperature so that transition from E-3 does not occur because temperature is either of the following: Too high to maintain minimum required subcooling OR Below the RCS temperature that cause an extreme or severe challenge to the subcriticality and/or the integrity CSF.
3. E-3--C: Depressurize RCS to meet SI termination criteria before water enters the steamlines.

Simulation Facility Braidwood Scenario No. 3 Operating Test No. 2002

Examiners: _____ Applicant: _____ SRO

_____ _____ RO

_____ _____ BOP

Initial Conditions: IC-18, 76% power MOL. Equil. Xe.

Turnover: Steady state with 1A CS Pump OOS for motor bearing replacement and 1D CD/CB pump OOS for an alignment and vibration problem. Electric Operations requests Bwd Unit-1 increase power to 1250 Mwe @ 5MW/min to meet grid demand.

Event No.	Malf. No.	Event Type*	Event Description
Preload	SI12A SI01B	C RO BOP SRO	1A SI Pump fails to Auto start, can be manually started 1B SI Pump fails to Auto start, cannot be manually started
1		N BOP SRO	Ramp up turbine power to 1250 MWe at directed MW/min.
		R RO SRO	Raise reactor power using rods and/or dilution
2	RX05, 0 5 min ramp	I BOP SRO	Main Steam Header Pressure controller (PT-507) fails low
3	CV17, 0	I RO SRO	Volume Control Tank (VCT) level channel 1LT-112 fails high
4	RX21A	I RO SRO	PT-455 Controlling Pressurizer Pressure channel fails high
5	MSO4B, 100	C BOP SRO	1MS018B, 1B Steam Generator PORV fails open
6	MRF RP61	C RO SRO BOP	All MSIV's fail closed at power
7	MS03B/F 100	M RO SRO BOP	Pressure surge causes Main Steam Safety valves (2) to stick open, Loop 1B
8	FWOO9B	C RO BOP	FRV-520 fails to close as required on FWI signal. Cannot be manually closed.
9	TH03B 600 gpm	M RO BOP SRO	SGTL occurs on 1B Steam Generator after Steam Generator has reached dry out conditions.

*(N)ormal, (R)eactivity (I)nstrument, (C)omponent, (M)ajor Transient

SCENARIO OVERVIEW

The Unit is at 76% power, MOL, equilibrium xenon. 1D CD/CB pump is OOS for alignment and vibration problems. 1A CS Pump is OOS for a motor bearing replacement. Power is to be increased at direction of Electric Operations using normal procedures. On-Line Risk is YELLOW because of the CS Pump OOS.

Following clearly observable plant response from the reactivity changes, the Main Steam Line pressure controller (PT-507) will fail low, resulting in decreased MFP speed and lowering main feedwater flow to the SGs. The crew should take manual control of MFP speed and adjust /increase MFW to the SGs. The Crew should match steam flow and feed flow and control MFP speed in manual.

After the secondary plant is stabilized, Volume Control Tank (VCT) Lever Controller (LT-112) with fail high. This will result in diverting letdown flow from the VCT to the Holdup Tank (HUT). The failure of 1LT-112 level channel will result in the loss of automatic level control and makeup to the VCT.

After actions have been taken to restore normal letdown flow, the controlling Pzr Pressure channel (PT-455) will fail high, causing a Pzr PORV (1RY-455A) and Pzr Spray valves to open, decreasing actual RCS pressure. The RO will diagnose the pressure malfunction from alarms, meter indications, and decreasing Pzr pressure. The RO must close the PORV or PORV block valve to stop the pressure decrease. Manual action will also be required to close the Pzr spray valves which will open due to the master pressure controller demand. The SRO will enter and direct actions of 1BwOP INST-2, Attachment B, "PRESSURIZER PRESSURE CHANNEL FAILURE", to select an operable controlling channel and restore automatic pressurizer pressure control, trip TS bistables, and identify TS Action requirements.

After actions have been completed for the failed Pzr Pressure channel, the 1B SG PORV controller will cause the 1B SG PORV to open. RCS Tave will decrease causing control rod motion in the outward direction. The crew will investigate the cause of the temperature decrease and diagnose the inadvertent PORV opening. Emergency closure of the PORV will be available. The PORV may be isolated locally by closure of the manual upstream isolation valve, 1MS019B.

After the unit is stablilzed following the open SG PORV, a failed capacitor in Instrument Inverter 111 will generate a spurious Main Steam Line Isolation signal (Bwd LER). All 4 MSIV's will automatically close at power, resulting in a Reactor Trip and Safety Injection. The Crew will enter and perform the immediate actions of 1BwEP-0, "REACTOR TRIP OR SAFETY INJECTION".

The resultant pressure increase following the spurious MSIV closure causes 2 Main Steam Line Safety valves on Loop 1B to open and stick open. The Operators will diagnose a fault on the 1B Steam Line while performing the actions of 1BwEP-0 as a faulted steam generator and transition to 1BwEP-2, "FAULTED STEAM GENERATOR ISOLATION", and will take actions to isolate the 1B Steam Generator. FRV-520 has failed to close following the Feedwater Isolation signal and the operators will have to take actions of step 4d RNO to manually close the upstream isolation valve, 1FW006B.

Once the faulted steam generator has been depressurized and dried out, the pressure delta P will cause a steam generator tube leak of 600gpm on the 1B SG. The crew will diagnose this by increasing containment radiation levels and decreasing RCS pressure and inventory. They must perform the actions of 1BwEP-3, "STEAM GENERATOR TUBE RUPTURE", and finally transition to 1BwCA-3.1, "SGTR WITH LOSS OF REACTOR COOLANT – SUBCOOLED RECOVERY DESIRED", when it is noted that the ruptured SG pressure is less than 320psig. The Scenario ends with the establishment of RCS Cooldown in 1BwCA-3.1.

Critical Tasks

1. E-0-J Establish flow from at least 1 intermediate head SI pump before transition out of EP-0
2. EP-2-A Isolate the faulted SG before transition out of EP-2
3. ECA-3.1-B Cooldown the RCS to cold shutdown conditions at the highest rate achievable but less than 100 degrees F per hour in all RCS cold legs.

Simulation Facility Braidwood | Scenario No. 4 | Operating Test No. 2002

Examiners: _____ | Applicant: _____ SRO

_____ _____ RO

_____ _____ BOP

Initial Conditions: IC-7, 28% power, BOL

Turnover: 28% power, BOL. The 1B Diesel Generator is OOS for replacement of Turbo Charger. The DG has been OOS for 18 hours and is expected to be returned to service by the end of the shift. 1C Heater Drain Pump is OOS for motor bearing replacement. Unit 2 SAC is OOS for an oil change and is expected to be returned to service by the end of the shift. The 1B CCW Pump is running for ASME testing.

Event No.	Malf. No.	Event Type*	Event Description
Preload	MF RP15_ RD12F (Preload)	C RO SRO BOP	1A Emergency Diesel Generator Sequencer Failure C-11 Rod Stop Failure
1		N BOP SRO	Ramp up Turbine Power to 620 Mwe at directed MW/min
		R RO SRO	Raise Reactor Power using rods and/or dilution
2	RX04A,0	I BOP SRO	Main Feedwater Flow Transmitter (1FT-510A) failure low (controlling channel failure)
3	RX13A, 0	I RO SRO	Controlling Pzr Level Channel (LT-459) failure low
4	CC10A	C BOP SRO	Loss of ESF Bus 142. Failure of 1A CCW pump to auto start.
5	OR ZDIBKSEL (AUTO) MF RX12,586	C RO SRO	Rod Control fails in Automatic Mode – Manual Mode is not available Tref Programmer fails HIGH Uncontrolled Outward Rod Motion
6	TH01	M RO BOP SRO	Manual Reactor Trip Pzr Vapor Space Leak / RCS LOCA resulting from rod control transient.
7	ED15C	C RO BOP SRO	Loss of SAT feed to ESF Bus 141. EDG 1A load sequencer does not function.

*(N)ormal, (R)eactivity (I)nstrument, (C)omponent, (M)ajor Transient

SCENARIO OVERVIEW

The unit is at 28% power, BOL. The 1B Diesel Generator is OOS for Turbo Charger replacement. The Diesel Generator has been OOS for 18 hours and is expected to be returned to service by the end of the shift. 1C Heater Drain Pump is OOS for motor bearing replacement. Unit 2 SAC is OOS for an oil change and is expected to be returned to service by the end of the shift. The 1B CCW Pump is running for ASME testing. Power is to be increased to 620 Mwe following 1BwGP 100-3, "POWER ASCENSION".

Following clearly observable plant response from the reactivity changes, the 1A Steam Generator controlling feed water flow transmitter (1FT-510A) will fail low, resulting in lowering feed flow to the 1A SG and decreasing level. The crew will diagnose the feed flow, steam flow mismatch and take actions to restore normal feed flow, either by selection of an operable feed flow channel or taking manual control for FRV-510 and restoring normal flow. The SRO will enter and direct actions of 1BwOA INST-2, Attachment G, "FEEDWATER FLOW CHANNEL FAILURE", and establish normal steam generator level control prior to reaching a lo-2 water level reactor trip condition in the 1A SG.

After actions for the feed flow failure are completed, a failure of the controlling channel of Pzr Level will occur causing letdown to isolate. The crew will respond by diagnosing the failure of the level channel and entering and performing the actions of 1BwOA INST-2, Attachment C, "PRESSURIZER LEVEL CHANNEL FAILURE." An alternate controlling channel will be selected, letdown will be manually restored, and the crew will take actions to restore Pzr level to program level. Bistable(s) will be tripped for the failed channel, and Tech Specs will be reviewed for applicability. LCO 3.3.1, Condition K will apply.

After the actions for the LT-459 failure are completed, an overcurrent condition on ESF Bus 142 will result in a loss of one ESF Bus. The Crew should diagnose the electrical failure and enter 1BwOA ELEC-3, "LOSS OF 4KV ESF BUS." At the same time, the 1B CCW Pump that was running for an ASME test will be deenergized, and the 1A CCW Pump will fail to automatically start on low discharge pressure. The crew must restore CCW flow to the unit by either manually starting the 1A CCW pump or the common CCW pump. The SRO will identify that DC Crosstie is required within one hour for DC Bus 112, and Offsite AC Power Availability Surveillances must be performed within one hour.

After the actions are complete for the loss of an ESF bus, the Tref Programmer will fail to it's highest value at 586°F. This will cause a Tref>Tave temperature mismatch and trigger rods to withdraw in automatic. Rod control will fail such that only automatic control is available (Manual will not function). Since the Tref program temperature cannot be defeated, this will result in a continuous, uncontrolled outward rod motion. The crew will recognize that no change in turbine loading has occurred and attempt to stop the outward rod motion by placing rod control in manual and taking the actions of 1BwOA ROD-1, "UNCONTROLLED ROD MOTION." When rod motion cannot be stopped the crew will manually trip Unit-1 reactor and perform the immediate actions of 1BwEP-0, "REACTOR TRIP OR SAFETY INJECTION."

Immediately following the manual reactor trip, a Pressurizer Vapor Space Leak develops. The crew should diagnose the decreasing pressurizer pressure and manually initiate Safety Injection. An automatic Safety Injection will occur if not manually actuated by the operators.

Sixty seconds after the manual reactor trip is initiated, the Main Generator will trip as designed. Coincident with the generator trip, the SAT feed to ESF Bus 141 is lost. This will deenergize the remaining ESF Bus. Emergency Diesel Generator 1A will close onto the bus as designed, but the SI and safe shutdown sequencers will fail to function correctly, resulting in an energized ESF Bus (141) but no ESF loads running. The crew will have to manually load/start safeguards equipment on Train A to restore one train of Safety Injection. 1BwOA ELEC-3 may be entered to perform the bus loading. Once SI flow is restored the crew will continue the remaining actions of 1BwEP-0 and transition to 1BwEP-1, "LOSS OF REACTOR OR SECONDARY COOLANT" to mitigate the Vapor Space LOCA in progress.

Completion criteria is entry of 1BwEP ES-1.2.

Critical Tasks

1. E-0--A: Manually trip the reactor from the control room before exiting 1BwOA ROD-1.
2. E-0--D: Manually actuate at least one train of SIS actuated safeguards equipment before transition to 1BwEP-1
3. E0--H,I: Manually start the 1B RH and 1B SI Pump before transition out of 1BwEP-0

Facility: Braidwood Units 1 and 2 Form ES-401-4

Exam Date: 07/08/2002 **Exam Level:** RO

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	5	3	2				3	2			1	16
	2	1	4	5				5	1			1	17
	3	0	1	1				0	1			0	3
	Totals Tier	6	8	8				8	4			2	36
2. Plant Systems	1	3	2	2	2	2	2	2	2	2	2	2	23
	2	3	3	2	2	2	2	1	2	1	1	1	20
	3	1	0	1	0	1	1	0	1	2	1	0	8
	Tier Totals	7	5	5	4	5	5	3	5	5	4	3	51
3. Generic Knowledge And Abilities		Cat 1			Cat 2			Cat 3			Cat 4		
		3			4			3			3		13

Note:
1. Ensure that at least two topics from every K/A category are sampled within each teir (i.e., the "Tier Totals" in each K/A category shall not be less than two).
2. Actual point totals must match those specified in the table.
3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category /tier.
6. The generic K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.
7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorites. Enter the tier totals for each category in the table above.

Facility: Braidwood Units 1 and 2

PWR R[illegible]xamination Outline

Printed: 03[illegible]002

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-4

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
005	Inoperable/Stuck Control Rod / 1	X						AK1.01 - Axial power imbalance	3.1	1
017	Reactor Coolant Pump (RCP) Malfunctions (Loss of RC Flow) / 4				X			AA1.22 - RCP seal failure/malfunction	4.0	1
024	Emergency Boration / 1	X						AK1.04 - Low temperature limits for boron concentration	2.8	1
024	Emergency Boration / 1					X		AA2.06 - When boron dilution is taking place	3.6	1
027	Pressurizer Pressure Control (PZR PCS) Malfunction / 3	X						AK1.03 - Latent heat of vaporization/condensation	2.6	1
040	Steam Line Rupture / 4						X	2.4.4 - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.0	1
055	Loss of Offsite and Onsite Power (Station Blackout) / 6					X		EA2.04 - Instruments and controls operable with only dc battery power available	3.7	1
062	Loss of Nuclear Service Water / 4				X			AA1.01 - Nuclear service water temperature indications	3.1	1
069	Loss of Containment Integrity / 5	X						AK1.01 - Effect of pressure on leak rate	2.6	1

ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1 Form ES-401-4

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
074	Inadequate Core Cooling / 4	X						EK1.08 - Definition of subcooled liquid	2.8	1
074	Inadequate Core Cooling / 4		X					EK2.09 - Controllers and positioners	2.6*	1
E08	Pressurized Thermal Shock / 4			X				EK3.2 - Normal, abnormal and emergency operating procedures associated with Pressurized Thermal Shock	3.6	1
E09	Natural Circulation Operations / 4		X					EK2.2 - Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility	3.6	1
E10	Natural Circulation with Steam Void in Vessel with/without RVLIS / 4				X			EA1.2 - Operating behavior characteristics of the facility	3.6	1
E14	High Containment Pressure / 5		X					EK2.2 - Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility	3.4	1
E14	High Containment Pressure / 5			X				EK3.2 - Normal, abnormal and emergency operating procedures associated with High Containment Pressure	3.1	1

K/A Category Totals: 5 3 2 3 2 1 **Group Point Total:** 16

Facility: Braidwood Units 1 and 2

PWR R[illegible]xamination Outline

Printed: 03[illegible]002

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-4

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
001	Continuous Rod Withdrawal / 1				X			AA1.04 - Operating switch for emergency boration motor-operated valve	3.8	1
003	Dropped Control Rod / 1				X			AA1.06 - RCS pressure and temperature	4.0	1
007	Reactor Trip / 1		X					EK2.03 - Reactor trip status panel	3.5	1
009	Small Break LOCA / 3	X						EK1.01 - Natural circulation and cooling, including reflux boiling	4.2	1
011	Large Break LOCA / 3			X				EK3.03 - Starting auxiliary feed pumps and flow, ED/G, and service water pumps	4.1	1
011	Large Break LOCA / 3					X		EA2.10 - Verification of adequate core cooling	4.5	1
025	Loss of Residual Heat Removal System (RHRS) / 4		X					AK2.03 - Service water or closed cooling water pumps	2.7	1
037	Steam Generator (S/G) Tube Leak / 3			X				AK3.09 - Maximum load change capability of facility	2.7*	1
038	Steam Generator Tube Rupture (SGTR) / 3				X			EA1.24 - Safety injection pump ammeter and indicators	3.6*	1
054	Loss of Main Feedwater (MFW) / 4				X			AA1.04 - HPI, under total feedwater loss conditions	4.4	1

ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2 Form ES-401-4

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
058	Loss of DC Power / 6			X				AK3.02 - Actions contained in EOP for loss of dc power	4.0	1
060	Accidental Gaseous Radwaste Release / 9		X					AK2.02 - Auxiliary building ventilation system	2.7	1
060	Accidental Gaseous Radwaste Release / 9			X				AK3.02 - Isolation of the auxiliary building ventilation	3.3*	1
061	Area Radiation Monitoring (ARM) System Alarms / 7						X	2.1.27 - Knowledge of system purpose and or function.	2.8	1
E01	Rediagnosis / 3		X					EK2.2 - Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility	3.5	1
E04	LOCA Outside Containment / 3			X				EK3.2 - Normal, abnormal and emergency operating procedures associated with LOCA Outside Containment	3.4	1
E16	High Containment Radiation / 9				X			EA1.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	3.1	1

K/A Category Totals: 1 4 5 5 1 1 **Group Point Total:** 17

Facility: Braidwood Units 1 and 2 **PWR Examination Outline** Printed: 03/002

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 3 **Form ES-401-4**

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
036	Fuel Handling Incidents / 8			X				AK3.02 - Interlocks associated with fuel handling equipment	2.9	1
E13	Steam Generator Overpressure / 4		X					EK2.2 - Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility	3.0	1
E15	Containment Flooding / 5					X		EA2.1 - Facility conditions and selection of appropriate procedures during abnormal and emergency operations	2.7	1

K/A Category Totals: 0 1 1 0 1 0 **Group Point Total:** 3

Facility: Braidwood Units 1 and 2

PWR RO Examination Outline

Printed: /2002

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-4

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
001	Control Rod Drive System / 1			X									K3.02 - RCS	3.4*	1
001	Control Rod Drive System / 1						X						K6.13 - Location and operation of RPIS	3.6	1
003	Reactor Coolant Pump System (RCPS) / 4				X								K4.04 - Adequate cooling of RCP motor and seals	2.8	1
003	Reactor Coolant Pump System (RCPS) / 4								X				A2.05 - Effects of VCT pressure on RCP seal leakoff flows	2.5	1
004	Chemical and Volume Control System (CVCS) / 1							X					A1.09 - RCS pressure and temperature	3.6	1
004	Chemical and Volume Control System (CVCS) / 1		X										K2.05 - MOVs	2.7	1
013	Engineered Safety Features Actuation System (ESFAS) / 2					X							K5.01 - Definitions of safety train and ESF channel	2.8	1
013	Engineered Safety Features Actuation System (ESFAS) / 2		X										K2.01 - ESFAS/safeguards equipment control	3.6*	1
015	Nuclear Instrumentation System / 7						X						K6.04 - Bistables and logic circuits	3.1	1
015	Nuclear Instrumentation System / 7							X					A1.07 - Changes in boron concentration	3.3*	1
017	In-Core Temperature Monitor (ITM) System / 7	X											K1.02 - RCS	3.3	1

ES - 401 Plant Systems - Tier 2 / Group 1 Form ES-401-4

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
017	In-Core Temperature Monitor (ITM) System / 7											X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	3.4	1
022	Containment Cooling System (CCS) / 5										X		A4.01 - CCS fans	3.6	1
022	Containment Cooling System (CCS) / 5											X	2.4.31 - Knowledge of annunciators alarms and indications, and use of the response instructions.	3.3	1
059	Main Feedwater (MFW) System / 4								X				A2.12 - Failure of feedwater regulating valves	3.1*	1
059	Main Feedwater (MFW) System / 4									X			A3.02 - Programmed levels of the S/G	2.9	1
061	Auxiliary / Emergency Feedwater (AFW) System / 4	X											K1.04 - RCS	3.9	1
061	Auxiliary / Emergency Feedwater (AFW) System / 4	X											K1.01 - S/G system	4.1	1
068	Liquid Radwaste System (LRS) / 9										X		A4.04 - Automatic isolation	3.8	1
068	Liquid Radwaste System (LRS) / 9					X							K5.03 - Units of radiation, dose, and dose rate	2.6	1
071	Waste Gas Disposal System (WGDS) / 9			X									K3.05 - ARM and PRM systems	3.2	1
072	Area Radiation Monitoring (ARM) System / 7				X								K4.01 - Containment ventilation isolation	3.3*	1

ES - 401 Plant Systems - Tier 2 / Group 1 Form ES-401-4

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
072	Area Radiation Monitoring (ARM) System / 7									X			A3.01 - Changes in ventilation alignment	2.9*	1

K/A Category Totals: 3 2 2 2 2 2 2 2 2 2 2 **Group Point Total:** 23

Facility: Braidwood Units 1 and 2

PWR RO ... amination Outline

Printed: ... /2002

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-4

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
002	Reactor Coolant System (RCS) / 2			X									K3.03 - Containment	4.2	1
002	Reactor Coolant System (RCS) / 2						X						K6.03 - Reactor vessel level indication	3.1	1
006	Emergency Core Cooling System (ECCS) / 2				X								K4.17 - Safety Injection valve interlocks	3.8	1
011	Pressurizer Level Control System (PZR LCS) / 2				X								K4.03 - Density compensation of PZR level	2.6	1
011	Pressurizer Level Control System (PZR LCS) / 2						X						K6.05 - Function of PZR level gauges as postaccident monitors	3.1	1
012	Reactor Protection System / 7			X									K3.03 - SDS	3.1*	1
012	Reactor Protection System / 7					X							K5.02 - Power density	3.1*	1
014	Rod Position Indication System (RPIS) / 1	X											K1.02 - NIS	3.0	1
016	Non-Nuclear Instrumentation System (NNIS) / 7										X		A4.02 - Recorders	2.7	1
026	Containment Spray System (CSS) / 5	X											K1.01 - ECCS	4.2	1
026	Containment Spray System (CSS) / 5		X										K2.02 - MOVs	2.7*	1

ES - 401 Plant Systems - Tier 2 / Group 2 Form ES-401-4

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
029	Containment Purge System (CPS) / 8								X				A2.04 - Health physics sampling of containment atmosphere	2.5*	1
029	Containment Purge System (CPS) / 8											X	2.4.49 - Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0	1
033	Spent Fuel Pool Cooling System (SFPCS) / 8								X				A2.03 - Abnormal spent fuel pool water level or loss of water level	3.1	1
062	A.C. Electrical Distribution System / 6		X										K2.01 - Major system loads	3.3	1
062	A.C. Electrical Distribution System / 6									X			A3.01 - Vital ac bus amperage	3.0	1
063	D.C. Electrical Distribution System / 6		X										K2.01 - Major DC loads	2.9*	1
064	Emergency Diesel Generator (ED/G) System / 6							X					A1.08 - Maintaining minimum load on ED/G (to prevent reverse power)	3.1	1
086	Fire Protection System (FPS) / 8	X											K1.03 - AFW System	3.4*	1
086	Fire Protection System (FPS) / 8					X							K5.03 - Effect of water spray on electrical components	3.1	1

K/A Category Totals: 3 3 2 2 2 2 1 2 1 1 1 **Group Point Total:** 20

Facility: Braidwood Units 1 and 2 **PWR RO Examination Outline** Printed: /2002

ES - 401 **Plant Systems - Tier 2 / Group 3** **Form ES-401-4**

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
005	Residual Heat Removal System (RHRS) / 4			X									K3.01 - RCS	3.9	1
005	Residual Heat Removal System (RHRS) / 4					X							K5.05 - Plant response during "solid plant": pressure change due to the relative incompressibility of water	2.7*	1
007	Pressurizer Relief Tank/Quench Tank System (PRTS) / 5									X			A3.01 - Components which discharge to the PRT	2.7*	1
008	Component Cooling Water System (CCWS) / 8	X											K1.03 - PRMS	2.8*	1
028	Hydrogen Recombiner and Purge Control System (HRPS) / 5										X		A4.03 - Location and operation of hydrogen sampling and analysis of containment atmosphere, including alarms and indications	3.1	1
034	Fuel Handling Equipment System (FHES) / 8						X						K6.02 - Radiation monitoring systems	2.6	1
034	Fuel Handling Equipment System (FHES) / 8									X			A3.02 - Load limits	2.5*	1
045	Main Turbine Generator (MT/G) System / 4								X				A2.08 - Steam dumps are not cycling properly at low load, or stick open at higher load (isolate and use atmospheric reliefs when necessary)	2.8	1

K/A Category Totals: 1 0 1 0 1 1 0 1 2 1 0 **Group Point Total:** 8

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 03/18/2

PWR RO Examination Outline

Form ES-401-5

Facility: Braidwood Units 1 and 2

Generic Category	KA	KA Topic	Imp.	Points
Conduct of Operations	2.1.1	Knowledge of conduct of operations requirements.	3.7	1
	2.1.9	Ability to direct personnel activities inside the control room.	2.5	1
	2.1.32	Ability to explain and apply all system limits and precautions.	3.4	1
			Category Total:	3
Equipment Control	2.2.1	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.	3.7	1
	2.2.3	(multi-unit) Knowledge of the design, procedural, and operational differences between units.	3.1	1
	2.2.4	(multi-unit) Ability to explain the variations in control board layouts, systems, instrumentation and procedural actions between units at a facility.	2.8	1
	2.2.33	Knowledge of control rod programming.	2.5	1
			Category Total:	4
Radiation Control	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	2.5	1
	2.3.9	Knowledge of the process for performing a containment purge.	2.5	1
	2.3.11	Ability to control radiation releases.	2.7	1
			Category Total:	3
Emergency Procedures/Plan	2.4.4	Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.0	1
	2.4.6	Knowledge symptom based EOP mitigation strategies.	3.1	1
	2.4.29	Knowledge of the emergency plan.	2.6	1
			Category Total:	3
			Generic Total:	13

ES-401 **PWR SRO Examination Outline** Printed: 03/18/2002

Facility: Braidwood Units 1 and 2 Form ES-401-3

Exam Date: 07/08/2002 **Exam Level:** SRO

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	4	4	4				4	4			4	24
	2	2	3	3				3	2			3	16
	3	0	1	0				0	1			1	3
	Tier Totals	6	8	7				7	7			8	43
2. Plant Systems	1	2	2	2	2	1	2	2	1	1	2	2	19
	2	1	1	2	1	2	2	1	2	1	2	2	17
	3	0	0	1	0	1	0	0	1	0	0	1	4
	Tier Totals	3	3	5	3	4	4	3	4	2	4	5	40
3. Generic Knowledge And Abilities		Cat 1			Cat 2			Cat 3			Cat 4		
		4			5			4			4		17

Note:
1. Ensure that at least two topics from every K/A category are sampled within each teir (i.e., the "Tier Totals" in each K/A category shall not be less than two).
2. Actual point totals must match those specified in the table.
3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category/tier.
6. The generic K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.
7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorites. Enter the tier totals for each category in the table above.

Facility: Braidwood Units 1 and 2 **PWR S[illegible] Examination Outline** Printed: 03[illegible]002

ES - 401 **Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1** **Form ES-401-3**

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
001	Continuous Rod Withdrawal / 1				X			AA1.04 - Operating switch for emergency boration motor-operated valve	3.6	1
003	Dropped Control Rod / 1				X			AA1.06 - RCS pressure and temperature	4.1	1
005	Inoperable/Stuck Control Rod / 1	X						AK1.01 - Axial power imbalance	3.8	1
011	Large Break LOCA / 3			X				EK3.03 - Starting auxiliary feed pumps and flow, ED/G, and service water pumps	4.3	1
017	Reactor Coolant Pump (RCP) Malfunctions (Loss of RC Flow) / 4				X			AA1.22 - RCP seal failure/malfunction	4.2	1
024	Emergency Boration / 1						X	2.4.4 - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.3	1
024	Emergency Boration / 1	X						AK1.04 - Low temperature limits for boron concentration	3.6	1
026	Loss of Component Cooling Water (CCW) / 8					X		AA2.04 - The normal values and upper limits for the temperatures of the components cooled by CCW	2.9*	1
026	Loss of Component Cooling Water (CCW) / 8						X	2.4.4 - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.3	1

ES - 401 Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1 Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
055	Loss of Offsite and Onsite Power (Station Blackout) / 6					X		EA2.03 - Actions necessary to restore power	4.7	1
055	Loss of Offsite and Onsite Power (Station Blackout) / 6						X	2.4.30 - Knowledge of which events related to system operations/status should be reported to outside agencies.	3.6	1
062	Loss of Nuclear Service Water / 4				X			AA1.01 - Nuclear service water temperature indications	3.1	1
069	Loss of Containment Integrity / 5	X						AK1.01 - Effect of pressure on leak rate	3.1	1
074	Inadequate Core Cooling / 4	X						EK1.08 - Definition of subcooled liquid	3.1	1
074	Inadequate Core Cooling / 4		X					EK2.09 - Controllers and positioners	2.6*	1
E01	Rediagnosis / 3		X					EK2.2 - Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility	3.8	1
E04	LOCA Outside Containment / 3						X	2.1.14 - Knowledge of system status criteria which require the notification of plant personnel.	3.3	1
E04	LOCA Outside Containment / 3			X				EK3.2 - Normal, abnormal and emergency operating procedures associated with LOCA Outside Containment	4.0	1

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1 **Form ES-401-3**

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
E08	Pressurized Thermal Shock / 4					X		EA2.2 - Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments	4.1	1
E08	Pressurized Thermal Shock / 4			X				EK3.2 - Normal, abnormal and emergency operating procedures associated with Pressurized Thermal Shock	4.0	1
E09	Natural Circulation Operations / 4					X		EA2.2 - Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments	3.8	1
E09	Natural Circulation Operations / 4		X					EK2.2 - Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility	3.9	1
E14	High Containment Pressure / 5		X					EK2.2 - Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility	3.8	1
E14	High Containment Pressure / 5			X				EK3.2 - Normal, abnormal and emergency operating procedures associated with High Containment Pressure	3.7	1

K/A Category Totals: 4 4 4 4 4 4 **Group Point Total:** 24

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2 **Form ES-401-3**

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
007	Reactor Trip / 1		X					EK2.03 - Reactor trip status panel	3.6	1
008	Pressurizer (PZR) Vapor Space Accident (Relief Valve Stuck Open) / 3					X		AA2.16 - RCS in-core thermocouple indicators; use of plant computer for interpretation	4.1	1
008	Pressurizer (PZR) Vapor Space Accident (Relief Valve Stuck Open) / 3						X	2.4.30 - Knowledge of which events related to system operations/status should be reported to outside agencies.	3.6	1
009	Small Break LOCA / 3	X						EK1.01 - Natural circulation and cooling, including reflux boiling	4.7	1
025	Loss of Residual Heat Removal System (RHRS) / 4		X					AK2.03 - Service water or closed cooling water pumps	2.7	1
027	Pressurizer Pressure Control (PZR PCS) Malfunction / 3	X						AK1.03 - Latent heat of vaporization/condensation	2.9	1
037	Steam Generator (S/G) Tube Leak / 3			X				AK3.09 - Maximum load change capability of facility	3.1*	1
038	Steam Generator Tube Rupture (SGTR) / 3					X		EA2.11 - Local radiation reading on main steam lines	3.9*	1
038	Steam Generator Tube Rupture (SGTR) / 3				X			EA1.24 - Safety injection pump ammeter and indicators	3.4	1
054	Loss of Main Feedwater (MFW) / 4				X			AA1.04 - HPI, under total feedwater loss conditions	4.5	1

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2 **Form ES-401-3**

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
058	Loss of DC Power / 6			X				AK3.02 - Actions contained in EOP for loss of dc power	4.2	1
060	Accidental Gaseous Radwaste Release / 9		X					AK2.02 - Auxiliary building ventilation system	3.1	1
060	Accidental Gaseous Radwaste Release / 9			X				AK3.02 - Isolation of the auxiliary building ventilation	3.5*	1
061	Area Radiation Monitoring (ARM) System Alarms / 7						X	2.1.27 - Knowledge of system purpose and or function.	2.9	1
065	Loss of Instrument Air / 8						X	2.4.49 - Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.	4.0	1
E16	High Containment Radiation / 9				X			EA1.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	3.2	1

K/A Category Totals: **2** **3** **3** **3** **2** **3** **Group Point Total:** **16**

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 3 **Form ES-401-3**

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
036	Fuel Handling Incidents / 8					X		AA2.03 - Magnitude of potential radioactive release	4.2*	1
E13	Steam Generator Overpressure / 4						X	2.4.30 - Knowledge of which events related to system operations/status should be reported to outside agencies.	3.6	1
E13	Steam Generator Overpressure / 4		X					EK2.2 - Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility	3.2	1

K/A Category Totals: 0 1 0 0 1 1 **Group Point Total:** 3

Facility: Braidwood Units 1 and 2

PWR SRO amination Outline

Printed: /2002

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
001	Control Rod Drive System / 1			X									K3.02 - RCS	3.5	1
001	Control Rod Drive System / 1						X						K6.13 - Location and operation of RPIS	3.7	1
003	Reactor Coolant Pump System (RCPS) / 4				X								K4.04 - Adequate cooling of RCP motor and seals	3.1	1
003	Reactor Coolant Pump System (RCPS) / 4								X				A2.05 - Effects of VCT pressure on RCP seal leakoff flows	2.8	1
004	Chemical and Volume Control System (CVCS) / 1							X					A1.09 - RCS pressure and temperature	3.8	1
013	Engineered Safety Features Actuation System (ESFAS) / 2											X	2.1.14 - Knowledge of system status criteria which require the notification of plant personnel.	3.3	1
013	Engineered Safety Features Actuation System (ESFAS) / 2					X							K5.01 - Definitions of safety train and ESF channel	3.2	1
014	Rod Position Indication System (RPIS) / 1	X											K1.02 - NIS	3.3	1
015	Nuclear Instrumentation System / 7						X						K6.04 - Bistables and logic circuits	3.2	1
015	Nuclear Instrumentation System / 7							X					A1.07 - Changes in boron concentration	3.4*	1
022	Containment Cooling System (CCS) / 5										X		A4.01 - CCS fans	3.6	1

Facility: Braidwood Units 1 and 2

PWR SR(amination Outline

Printed: (/2002

ES - 401 **Plant Systems - Tier 2 / Group 1** **Form ES-401-3**

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
026	Containment Spray System (CSS) / 5	X											K1.01 - ECCS	4.2	1
026	Containment Spray System (CSS) / 5		X										K2.02 - MOVs	2.9	1
059	Main Feedwater (MFW) System / 4											X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1
063	D.C. Electrical Distribution System / 6		X										K2.01 - Major DC loads	3.1*	1
068	Liquid Radwaste System (LRS) / 9										X		A4.04 - Automatic isolation	3.7	1
071	Waste Gas Disposal System (WGDS) / 9			X									K3.05 - ARM and PRM systems	3.2	1
072	Area Radiation Monitoring (ARM) System / 7				X								K4.01 - Containment ventilation isolation	3.6*	1
072	Area Radiation Monitoring (ARM) System / 7									X			A3.01 - Changes in ventilation alignment	3.1	1

K/A Category Totals: **2 2 2 2 1 2 2 1 1 2 2** **Group Point Total: 19**

Facility: Braidwood Units 1 and 2 | PWR SRO amination Outline | Printed: '2002

ES - 401 | Plant Systems - Tier 2 / Group 2 | Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
002	Reactor Coolant System (RCS) / 2			X									K3.03 - Containment	4.6	1
002	Reactor Coolant System (RCS) / 2						X						K6.03 - Reactor vessel level indication	3.6	1
006	Emergency Core Cooling System (ECCS) / 2				X								K4.17 - Safety Injection valve interlocks	4.1	1
012	Reactor Protection System / 7			X									K3.03 - SDS	3.3	1
012	Reactor Protection System / 7					X							K5.02 - Power density	3.3*	1
016	Non-Nuclear Instrumentation System (NNIS) / 7										X		A4.02 - Recorders	2.6*	1
028	Hydrogen Recombiner and Purge Control System (HRPS) / 5										X		A4.03 - Location and operation of hydrogen sampling and analysis of containment atmosphere, including alarms and indications	3.3	1
029	Containment Purge System (CPS) / 8								X				A2.04 - Health physics sampling of containment atmosphere	3.2*	1
033	Spent Fuel Pool Cooling System (SFPCS) / 8								X				A2.03 - Abnormal spent fuel pool water level or loss of water level	3.5	1
034	Fuel Handling Equipment System (FHES) / 8						X						K6.02 - Radiation monitoring systems	3.3	1
034	Fuel Handling Equipment System (FHES) / 8									X			A3.02 - Load limits	3.1	1

ES - 401 Plant Systems - Tier 2 / Group 2 Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
039	Main and Reheat Steam System (MRSS) / 4											X	2.2.25 - Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
062	A.C. Electrical Distribution System / 6		X										K2.01 - Major system loads	3.4	1
064	Emergency Diesel Generator (ED/G) System / 6							X					A1.08 - Maintaining minimum load on ED/G (to prevent reverse power)	3.4	1
075	Circulating Water System / 8											X	2.4.6 - Knowledge symptom based EOP mitigation strategies.	4.0	1
086	Fire Protection System (FPS) / 8	X											K1.03 - AFW System	3.5*	1
086	Fire Protection System (FPS) / 8					X							K5.03 - Effect of water spray on electrical components	3.4	1

K/A Category Totals: 1 1 2 1 2 2 1 2 1 2 2 **Group Point Total:** 17

Facility: Braidwood Units 1 and 2

PWR SRO amination Outline

Printed: 2002

ES - 401

Plant Systems - Tier 2 / Group 3

Form ES-401-3

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
005	Residual Heat Removal System (RHRS) / 4			X									K3.01 - RCS	4.0	1
005	Residual Heat Removal System (RHRS) / 4					X							K5.05 - Plant response during "solid plant": pressure change due to the relative incompressibility of water	3.1*	1
045	Main Turbine Generator (MT/G) System / 4											X	2.2.25 - Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
045	Main Turbine Generator (MT/G) System / 4								X				A2.08 - Steam dumps are not cycling properly at low load, or stick open at higher load (isolate and use atmospheric reliefs when necessary)	3.1*	1
K/A Category Totals:		**0**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**1**		**Group Point Total:**	**4**

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 03/18/2

PWR SRO Examination Outline

Form ES-401-5

Facility: Braidwood Units 1 and 2

Generic Category	KA	KA Topic	Imp.	Points
Conduct of Operations	2.1.4	Knowledge of shift staffing requirements.	3.4	1
	2.1.9	Ability to direct personnel activities inside the control room.	4.0	1
	2.1.32	Ability to explain and apply all system limits and precautions.	3.8	1
	2.1.34	Ability to maintain primary and secondary plant chemistry within allowable limits.	2.9	1
			Category Total:	**4**
Equipment Control	2.2.3	(multi-unit) Knowledge of the design, procedural, and operational differences between units.	3.3	1
	2.2.25	Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
	2.2.28	Knowledge of new and spent fuel movement procedures.	3.5	1
	2.2.31	Knowledge of procedures and limitations involved in initial core loading.	2.9*	1
	2.2.33	Knowledge of control rod programming.	2.9	1
			Category Total:	**5**
Radiation Control	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements.	3.0	1
	2.3.3	Knowledge of SRO responsibilities for auxiliary systems that are outside the control room (e.g., waste disposal and handling systems).	2.9	1
	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	3.1	1
	2.3.9	Knowledge of the process for performing a containment purge.	3.4	1
			Category Total:	**4**

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 03/18/2

PWR SRO Examination Outline

Form ES-401-5

Facility: Braidwood Units 1 and 2

Generic Category	KA	KA Topic	Imp.	Points
Emergency Procedures/Plan	2.4.7	Knowledge of event based EOP mitigation strategies.	3.8	1
	2.4.27	Knowledge of fire in the plant procedure.	3.5	1
	2.4.29	Knowledge of the emergency plan.	4.0	1
	2.4.32	Knowledge of operator response to loss of all annunciators.	3.5	1

Category Total: **4**

Generic Total: **17**

Tier / Group	Randomly Selected K/A	Reason for Rejection
1/3	000030K302	Removed following NRC exam review, Not RO required Knowledge. New randomly selected KA generated as replacement. Tier 1 gp 3. (000WE13K302)
2/3	034000A302	Removed Following NRC exam review, NOT RO required Knowledge. New randomly selected KA generated as replacement for RO exam. Remains on SRO exam. Tier 2 gp 3 (027000K201)

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Exelon Nuclear

March 8, 2002
BW020018

Michael Bielby
Lead Examiner
U.S. Nuclear Regulatory Commission
Region III
801 Warrenville Road
Lisle, IL 60532-4351

Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

Subject: Submittal of Knowledge and Abilities (K/A) statements that will be suppressed from the random exam generation process

In accordance with NUREG 1021, Revision 8, Supplement 1, "Operator Licensing Examination Standards for Power Reactors," Braidwood Station is submitting for your review the list of K/A statements that will be suppressed from the random exam generation process in support of our July 8, 2002 license exam.

If there are any questions or comments regarding this submittal, please contact Amy Ferko, at (815) 417-2699.

Respectfully,

James D. von Suskil
Site Vice President
Braidwood Station

Enclosures: Braidwood and Byron Suppressed K/A statements

cc: (without attachments)
Chief, NRC Operator Licensing Branch
NRC Senior Resident Inspector – Braidwood Station

MAR 08 2002

Braidwood and Byron Suppressed KAs

Viewed KA	Category Statement	KA Statement	RO Value	SRO Value	Suppress Basis
000001	*Continuous Rod Withdrawal*				
AK1.14	Knowledge of the following theoretical concepts as they apply to the Continuous Rod Withdrawal emergency task:	Interaction of ICS control stations as well as purpose, function, and modes of operation of ICS	3.4	3.7	Not applicable to Braidwood/Byron.
000003	*Dropped Control Rod*				
AK1.13	Knowledge of the following theoretical concepts as they apply to the Dropped Control Rod emergency task:	Interaction of ICS control stations as well as purpose, function, and modes of operation of ICS	3.2	3.6	Not applicable to Braidwood/Byron.
AK2.03	Knowledge of the following components:	Metroscope	3.1	3.2	Not applicable to Braidwood/Byron.
AK3.04	Knowledge of the bases or reasons for the following:	Actions contained in EOP for dropped control rod	3.8	4.1	Not applicable to Braidwood/Byron.
000005	*Inoperable/Stuck Control Rod*				
AA1.03	Ability to operate and monitor the following:	Metroscope	3.4	3.4	Not applicable to Braidwood/Byron.
AA2.02	Ability to determine or interpret:	Difference between jog and run rod speeds, effect on CRDM of stuck rod	2.5	3.0	Not applicable to Braidwood/Byron.
AK1.04	Knowledge of the following theoretical concepts as they apply to the inoperable/stuck control rod emergency task:	Definitions of axial imbalance, neutron error, power demand, actual power tracking mode, ICS tracking	3.0	3.4	Not applicable to Braidwood/Byron.
AK2.03	Knowledge of the following components:	Metroscope	3.1	3.3	Not applicable to Braidwood/Byron.
000009	*Small Break LOCA*				
EA1.03	Ability to operate and monitor the following:	Low-pressure SWS activity monitor	3.2	3.2	Not applicable to Braidwood/Byron.
EA1.18	Ability to operate and monitor the following:	Balancing of HPI loop flows	3.4	3.2	Not applicable to Braidwood/Byron.
EA2.09	Ability to determine or interpret:	Low-pressure SWS activity monitor	2.8	3.3	Not applicable to Braidwood/Byron.
EA2.35	Ability to determine or interpret:	Conditions for throttling or stopping reflux boiling spray	3.4	4.1	Not applicable to Braidwood/Byron.
EK3.25	Knowledge of the bases or reasons for the following:	Monitoring of in-core T-cold	3.6	3.9	Not applicable to Braidwood/Byron.
EK3.27	Knowledge of the bases or reasons for the following:	Manual depressurization or HPI recirculation for sustained high pressure	3.6	3.8	Not applicable to Braidwood/Byron.
000011	*Large Break LOCA*				

Viewed KA	Category Statement	KA Statement	RO Value	SRO Value	Suppress Basis
EA1.02	Ability to operate and monitor the following:	Reflux boiling sump level indicators	3.8	4.1	Not applicable to Braidwood/Byron.
EA1.09	Ability to operate and monitor the following:	Core flood tank initiation	4.3	4.3	Not applicable to Braidwood/Byron.
EA1.16	Ability to operate and monitor the following:	Balancing of HPI loop flows	3.5	3.5	Not applicable to Braidwood/Byron.
EA2.11	Ability to determine or interpret:	Conditions for throttling or stopping HPI	3.9	4.3	Not applicable to Braidwood/Byron.
EA2.12	Ability to determine or interpret:	Conditions for throttling or stopping reflux boiling spray	3.6	3.8	Not applicable to Braidwood/Byron.
EK3.07	Knowledge of the bases or reasons for the following:	Stopping charging pump bypass flow	3.5	3.6	Not applicable to Braidwood/Byron.
000015	*Reactor Coolant Pump (RCP) Malfunctions*				
AA1.04	Ability to operate and monitor the following:	RCP ventilation cooling fan run indicators	2.5	2.5	Not applicable to Braidwood/Byron.
AA1.19	Ability to operate and monitor the following:	Power transfer confirm lamp	2.9	3.0	Not applicable to Braidwood/Byron.
AA2.09	Ability to determine or interpret:	When to secure RCPs on high stator temperatures	3.4	3.5	Braidwood and Byron have no procedural requirement to stop RCPs based on Stator Temperature.
AK1.03	Knowledge of the following theoretical concepts as they apply to the RCP malfunctions emergency task:	The basis for operating at a reduced power level when one RCP is out of service	3.0	4.0	Not applicable to Braidwood/Byron.
AK3.04	Knowledge of the bases or reasons for the following:	Reduction of power to below the steady state power-to-flow limit	3.1	3.2	Not applicable to Braidwood/Byron.
000017	*Reactor Coolant Pump (RCP) Malfunctions (Loss of RC Flow)*				
AA1.04	Ability to operate and monitor the following:	RCP ventilation cooling fan run indicators	2.5	2.5	Not applicable to Braidwood/Byron.
AA1.19	Ability to operate and monitor the following:	Power transfer confirm lamp	2.9	3.0	Not applicable to Braidwood/Byron.
AK1.03	Knowledge of the following theoretical concepts as they apply to the RCP malfunctions emergency task:	The basis for operating at a reduced power level when one RCP is out of service	3.0	4.0	Not applicable to Braidwood/Byron.
AK3.04	Knowledge of the bases or reasons for the following:	Reduction of power to below the steady state power-to-flow limit	3.1	3.2	Not applicable to Braidwood/Byron.
000024	*Emergency Boration*				
AA1.08	Ability to operate and monitor the following:	Pump speed controlled to protect pump seals	2.7	3.0	Not applicable to Braidwood/Byron.
AA1.11	Ability to operate and monitor the following:	BIT suction and recirculation valves	2.9	2.7	Not applicable to Braidwood/Byron.
AA1.24	Ability to operate and monitor the following:	BIT inlet and outlet valve switches and indicators	3.2	3.1	Not applicable to Braidwood/Byron.

Viewed KA	Category Statement	KA Statement	RO Value	SRO Value	Suppress Basis
000025	*Loss of Residual Heat Removal System (RHRS)*				
AA1.05	Ability to operate and monitor the following:	Raw water or sea water pumps	2.7	2.6	Not applicable to Braidwood/Byron.
AA1.22	Ability to operate and monitor the following:	Obtaining of water from BWST for LPI system	2.9	2.8	Not applicable to Braidwood/Byron.
AA2.05	Ability to determine or interpret:	Limitations on LPI flow and temperature rates of change	3.1	3.5	Not applicable to Braidwood/Byron.
AK2.04	Knowledge of the following components:	Raw water or sea water pumps	2.4	2.4	Not applicable to Braidwood/Byron.
000026	*Loss of Component Cooling Water (CCW)*				
AA1.04	Ability to operate and monitor the following:	CRDM high-temperature alarm system	2.7	2.8	Not applicable to Braidwood/Byron.
AK3.01	Knowledge of the bases or reasons for the following:	The conditions that will initiate the automatic opening and closing of the SWS isolation valves to the CCW/nuclear service water coolers	3.2	3.5	Not applicable to Braidwood/Byron.
000029	*Anticipated Transient Without Scram (ATWS)*				
EA1.04	Ability to operate and monitor the following:	BIT inlet valve switches	3.9	3.8	Not applicable to Braidwood/Byron.
EA1.05	Ability to operate and monitor the following:	BIT outlet valve switches	3.7	3.6	Not applicable to Braidwood/Byron.
EA2.10	Ability to determine or interpret:	Positive displacement charging pumps	3.1	3.4	Not applicable to Braidwood/Byron.
EK3.03	Knowledge of the bases or reasons for the following:	Opening BIT inlet and outlet valves	3.7	3.6	Not applicable to Braidwood/Byron.
EK3.04	Knowledge of the bases or reasons for the following:	Closing the normal charging header isolation valves	3.1	3.1	Not applicable to Braidwood/Byron.
EK3.05	Knowledge of the bases or reasons for the following:	Closing the centrifugal charging pump recirculation valve	3.4	3.5	Not applicable to Braidwood/Byron.
000056	*Loss of Offsite Power*				
AA1.20	Ability to operate and monitor the following:	Speed switch room ventilation fan	3.0	3.0	Not applicable to Braidwood/Byron.
000057	*Loss of Vital AC Electrical Instrument Bus*				
AA2.02	Ability to determine or interpret:	Core flood tank pressure and level indicators	3.7	3.8	Not applicable to Braidwood/Byron.
000062	*Loss of Nuclear Service Water*				
AA1.04	Ability to operate and monitor the following:	CRDM high-temperature alarm system	2.7	2.8	Not applicable to Braidwood/Byron.
000068	*Control Room Evacuation*				

Viewed KA	Category Statement	KA Statement	RO Value	SRO Value	Suppress Basis
AA1.20	Ability to operate and monitor the following:	Indicators for operation of startup transformer	3.2	3.2	Not applicable to Braidwood/Byron.
000074	*Inadequate Core Cooling*				
EA1.03	Ability to operate and monitor the following:	The alternate control station for turbine bypass valve operation	3.9	3.9	Not applicable to Braidwood/Byron.
EA1.08	Ability to operate and monitor the following:	HPI System	4.2	4.2	Not applicable to Braidwood/Byron.
EA1.14	Ability to operate and monitor the following:	Alarm for loss of subcooling margin	4.1	4.2	Not applicable to Braidwood/Byron.
001000	*Control Rod Drive System*				
A4.01	Ability to manually operate and/or monitor in the control room:	Controls for CCWS	3.1	2.9	Not applicable to Braidwood/Byron.
A4.04	Ability to manually operate and/or monitor in the control room:	Part-length rod position	3.9	3.6	Not applicable to Braidwood/Byron.
A4.07	Ability to manually operate and/or monitor in the control room:	Power source transfer check	3.3	3.3	Not applicable to Braidwood/Byron.
K1.01	Knowledge of the physical connections and/or cause-effect relationships between the CRDS and the following systems:	CCW	3.0	3.2	Not applicable to Braidwood/Byron.
K4.04	Knowledge of CRDS design feature(s) and/or interlock(s) which provide for the following:	Circuitry and principle of operation for LVDT or reed switch	2.5	2.8	Not applicable to Braidwood/Byron.
K5.11	Knowledge of the following theoretical concepts as they apply to the CRDS:	Relationship between reactivity worth of power-shaping control rod group and other control rod groups (power-shaping, or part-length, rods have much less reactivity than full-length control rods)	3.1	3.6	Not applicable to Braidwood/Byron.
K5.12	Knowledge of the following theoretical concepts as they apply to the CRDS:	Effects on power of inserting axial shaping rods	3.4	4.1	Not applicable to Braidwood/Byron.
002000	*Reactor Coolant System (RCS)*				
A3.02	Ability to monitor automatic operation of the RCS, including:	Containment sound-monitoring system	2.6	2.8	Not applicable to Braidwood/Byron.
A4.04	Ability to manually operate and/or monitor in the control room:	The filling/draining of LPI pumps during refueling	2.8	2.6	Not applicable to Braidwood/Byron.
A4.05	Ability to manually operate and/or monitor in the control room:	The HPI system when it is used to refill the refueling cavity	2.8	2.7	Not applicable to Braidwood/Byron.
K5.16	Knowledge of the following theoretical concepts as they apply to the RCS:	Reason for automatic features of the Feedwater control system during total loss of reactor coolant flow	3.5	4.0	Not applicable to Braidwood/Byron.
003000	*Reactor Coolant Pump System (RCPS)*				
K3.05	Knowledge of the effect that a loss of the RCPS will have on the following:	ICS	3.6	3.7	Not applicable to Braidwood/Byron.
004000	*Chemical and Volume Control System (CVCS)*				

Viewed KA	Category Statement	KA Statement	RO Value	SRO Value	Suppress Basis
K1.09	Knowledge of the physical connections and/or cause-effect relationships between the CVCS and the following systems:	Relationship between CVCS and RPIS	2.2	2.7	Not applicable to Braidwood/Byron.
006000	*Emergency Core Cooling System (ECCS)*				
A4.03	Ability to manually operate and/or monitor in the control room:	Transfer from boron storage tank to boron injection tank	3.5	3.5	Not applicable to Braidwood/Byron.
K1.07	Knowledge of the physical connections and/or cause-effect relationships between the ECCS and the following systems:	MFW System	2.9	3.3	Not applicable to Braidwood/Byron.
K1.10	Knowledge of the physical connections and/or cause-effect relationships between the ECCS and the following systems:	Safety injection tank heating system	2.6	2.8	Not applicable to Braidwood/Byron.
K2.03	Knowledge of bus power supplies to the following:	Heat tracing	2.3	2.5	Not applicable to Braidwood/Byron.
007000	*Pressurizer Relief Tank/Quench Tank System (PRTS)*				
A4.04	Ability to manually operate and/or monitor in the control room:	PZR vent valve	2.6	2.6	Not applicable to Braidwood/Byron.
010000	*Pressurizer Pressure Control System (PZR PCS)*				
K4.02	Knowledge of PZR PCS design feature(s) and/or interlock(s) which provide for the following:	Prevention of uncovering PZR heaters	3.0	3.4	prevention of uncovering pressurizer heaters is covered by level control circuitry and is addressed by K/A 011000K4.01
011000	*Pressurizer Level Control System (PZR LCS)*				
A2.08	Ability to (a) predict the impacts of the following malfunctions or operations on the PZR LCS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:	Loss of level compensation	2.6	2.8	Not applicable to Braidwood/Byron.
K1.05	Knowledge of the physical connections and/or cause-effect relationships between the PZR LCS and the following systems:	Reactor regulating system	3.4	3.5	Not applicable to Braidwood/Byron.
012000	*Reactor Protection System*				
K6.07	Knowledge of the applicable performance and design attributes of the following RPS components:	Core protection calculator	2.9	3.2	Not applicable to Braidwood/Byron.
K6.08	Knowledge of the applicable performance and design attributes of the following RPS components:	COLSS	3.6	3.7	Not applicable to Braidwood/Byron.
K6.09	Knowledge of the applicable performance and design attributes of the following RPS components:	CEAC	3.6	3.7	Not applicable to Braidwood/Byron.

Viewed KA	Category Statement	KA Statement	RO Value	SRO Value	Suppress Basis
013000	*Engineered Safety Features Actuation System (ESFAS)*				
K4.14	Knowledge of ESFAS design feature(s) and/or interlock(s) which provide for the following:	Upper head injection accumulator isolation	3.7	4.0	Not applicable to Braidwood/Byron.
K4.24	Knowledge of ESFAS design feature(s) and/or interlock(s) which provide for the following:	Reason for disabling of BIT so it will not function during ESF sequencer test	3.0	3.1	Not applicable to Braidwood/Byron.
014000	*Rod Position Indication System (RPIS)*				
A1.01	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RPIS controls including:	Metroscope reed switch display	2.9	3.1	Not applicable to Braidwood/Byron.
A2.06	Ability to (a) predict the impacts of the following malfunctions or operations on the RPIS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:	Loss of LVDT	2.6	3.0	Not applicable to Braidwood/Byron.
A2.07	Ability to (a) predict the impacts of the following malfunctions or operations on the RPIS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:	Loss of reed switch	2.6	2.9	Not applicable to Braidwood/Byron.
K6.03	Knowledge of the applicable performance and design attributes of the following RPIS components:	Metroscope	2.1	2.6	Not applicable to Braidwood/Byron.
015000	*Nuclear Instrumentation System*				
K1.05	Knowledge of the physical connections and/or cause-effect relationships between the NIS and the following systems:	ICS	3.9	3.9	Not applicable to Braidwood/Byron.
K1.06	Knowledge of the physical connections and/or cause-effect relationships between the NIS and the following systems:	Reactor regulating system	3.1	3.4	Not applicable to Braidwood/Byron.
K3.04	Knowledge of the effect that a loss of the NIS will have on the following:	ICS	3.4	4.0	Not applicable to Braidwood/Byron.
K3.06	Knowledge of the effect that a loss of the NIS will have on the following:	Reactor regulating system	2.9	3.2	Not applicable to Braidwood/Byron.
K4.04	Knowledge of NIS design feature(s) and/or interlock(s) which provide for the following:	Slow response time of SPNDs	3.4	3.6	Not applicable to Braidwood/Byron.
022000	*Containment Cooling System (CCS)*				
K1.02	Knowledge of the physical connections and/or cause-effect relationships between the CCS and the following systems:	SEC/remote monitoring systems	3.7	3.5	Not applicable to Braidwood/Byron.
025000	*Ice Condenser System*				

Viewed KA	Category Statement	KA Statement	RO Value	SRO Value	Suppress Basis
A1.01	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the Ice Condenser System controls including:	Temperature chart recorders	3.0	3.0	Braidwood and Byron do not have Ice Condensers
A1.02	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the Ice Condenser System controls including:	Glycol expansion tank level	2.5	2.2	Braidwood and Byron do not have Ice Condensers
A1.03	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the Ice Condenser System controls including:	Glycol flow to ice condenser air handling units	2.5	2.5	Braidwood and Byron do not have Ice Condensers
A2.01	Ability to (a) predict the impacts of the following malfunctions or operations on the Ice Condenser System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:	Trip of glycol circulation pumps	2.2	2.7	Braidwood and Byron do not have Ice Condensers
A2.02	Ability to (a) predict the impacts of the following malfunctions or operations on the Ice Condenser System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:	High/low floor cooling temperature	2.7	2.5	Braidwood and Byron do not have Ice Condensers
A2.03	Ability to (a) predict the impacts of the following malfunctions or operations on the Ice Condenser System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:	Opening of ice condenser doors	3.0	3.2	Braidwood and Byron do not have Ice Condensers
A2.04	Ability to (a) predict the impacts of the following malfunctions or operations on the Ice Condenser System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:	Containment isolation	3.0	3.2	Braidwood and Byron do not have Ice Condensers
A2.05	Ability to (a) predict the impacts of the following malfunctions or operations on the Ice Condenser System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:	Abnormal glycol expansion tank level	2.5	2.7	Braidwood and Byron do not have Ice Condensers
A2.06	Ability to (a) predict the impacts of the following malfunctions or operations on the Ice Condenser System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:	Decreasing ice condenser temperature	2.5	2.7	Braidwood and Byron do not have Ice Condensers
A3.01	Ability to monitor automatic operation of the Ice Condenser System, including:	Refrigerant system	3.0	3.0	Braidwood and Byron do not have Ice Condensers
A3.02	Ability to monitor automatic operation of the Ice Condenser System, including:	Isolation valves	3.4	3.4	Braidwood and Byron do not have Ice Condensers

Viewed KA	Category Statement	KA Statement	RO Value	SRO Value	Suppress Basis
A4.01	Ability to manually operate and/or monitor in the control room:	Ice condenser isolation valves	3.0	2.7	Braidwood and Byron do not have Ice Condensers
A4.02	Ability to manually operate and/or monitor in the control room:	Containment vent fans	2.7	2.5	Braidwood and Byron do not have Ice Condensers
A4.03	Ability to manually operate and/or monitor in the control room:	Glycol circulation pumps	2.2	2.2	Braidwood and Byron do not have Ice Condensers
K1.01	Knowledge of the physical connections and/or cause-effect relationships between the Ice Condenser System and the following systems:	Containment ventilation	2.7	2.7	Braidwood and Byron do not have Ice Condensers
K1.02	Knowledge of the physical connections and/or cause-effect relationships between the Ice Condenser System and the following systems:	Refrigerant systems	2.7	2.7	Braidwood and Byron do not have Ice Condensers
K1.03	Knowledge of the physical connections and/or cause-effect relationships between the Ice Condenser System and the following systems:	Containment sump system	3.2	3.0	Braidwood and Byron do not have Ice Condensers
K2.01	Knowledge of bus power supplies to the following:	Containment ventilation fans and dampers	2.2	2.7	Braidwood and Byron do not have Ice Condensers
K2.02	Knowledge of bus power supplies to the following:	Refrigerant systems	2.0	2.5	Braidwood and Byron do not have Ice Condensers
K2.03	Knowledge of bus power supplies to the following:	Isolation valves	2.0	2.2	Braidwood and Byron do not have Ice Condensers
K3.01	Knowledge of the effect that a loss of the Ice Condenser System will have on the following:	Containment	3.8	3.8	Braidwood and Byron do not have Ice Condensers
K4.01	Knowledge of Ice Condenser System design feature(s) and/or interlock(s) which provide for the following:	Glycol expansion tank levels and ice condenser system containment isolation valves	2.2	2.5	Braidwood and Byron do not have Ice Condensers
K4.02	Knowledge of Ice Condenser System design feature(s) and/or interlock(s) which provide for the following:	System control	2.8	3.0	Braidwood and Byron do not have Ice Condensers
K5.01	Knowledge of the following theoretical concepts as they apply to the Ice Condenser System:	Relationships between pressure and temperature	3.0	3.4	Braidwood and Byron do not have Ice Condensers
K5.02	Knowledge of the following theoretical concepts as they apply to the Ice Condenser System:	Heat transfer	2.6	2.8	Braidwood and Byron do not have Ice Condensers
K5.03	Knowledge of the following theoretical concepts as they apply to the Ice Condenser System:	Gas laws	2.4	2.8	Braidwood and Byron do not have Ice Condensers
K6.01	Knowledge of the applicable performance and design attributes of the following Ice Condenser System components:	Upper and lower doors of the ice condenser	3.4	3.6	Braidwood and Byron do not have Ice Condensers

Viewed KA	Category Statement	KA Statement	RO Value	SRO Value	Suppress Basis
026000	*Containment Spray System (CSS)*				
K1.02	Knowledge of the physical connections and/or cause-effect relationships between the CSS and the following systems:	Cooling water	4.1	4.1	Containment Spray pumps have no cooling water at Braidwood/Byron
039000	*Main and Reheat Steam System (MRSS)*				
A4.04	Ability to manually operate and/or monitor in the control room:	Emergency feedwater pump turbines	3.8	3.9	Not applicable to Braidwood/Byron.
K3.03	Knowledge of the effect that a loss of the MRSS will have on the following:	AFW pumps	3.2	3.5	Braidwood and Byron do not have turbine driven AFW pumps.
K4.07	Knowledge of MRSS design feature(s) and/or interlock(s) which provide for the following:	Reactor building isolation	3.4	3.7	Not applicable to Braidwood/Byron.
045000	*Main Turbine Generator (MT/G) System*				
K4.08	Knowledge of MT/G System design feature(s) and/or interlock(s) which provide for the following:	The reactor bailey station and reactor diamond station in integrated control circuitry	2.6	3.0	Not applicable to Braidwood/Byron.
059000	*Main Feedwater (MFW) System*				
A3.07	Ability to monitor automatic operation of the MFW System, including:	ICS	3.4	3.5	Not applicable to Braidwood/Byron.
A4.10	Ability to manually operate and/or monitor in the control room:	ICS	3.9	3.8	Not applicable to Braidwood/Byron.
A4.12	Ability to manually operate and/or monitor in the control room:	Initiation of automatic feedwater isolation	3.4	3.5	Not applicable to Braidwood/Byron.
K1.07	Knowledge of the physical connections and/or cause-effect relationships between the MFW System and the following systems:	ICS	3.2	3.2	Not applicable to Braidwood/Byron.
061000	*Auxiliary / Emergency Feedwater (AFW) System*				
A2.02	Ability to (a) predict the impacts of the following malfunctions or operations on the AFW System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:	Loss of air to steam supply valve	3.2	3.6	Not applicable to Braidwood/Byron.
A3.04	Ability to monitor automatic operation of the AFW System, including:	Automatic AFW isolation	4.1	4.2	Not applicable to Braidwood/Byron.
K4.07	Knowledge of AFW System design feature(s) and/or interlock(s) which provide for the following:	Turbine trip, including overspeed	3.1	3.3	Not applicable to Braidwood/Byron.
K4.11	Knowledge of AFW System design feature(s) and/or interlock(s) which provide for the following:	Automatic level control	2.7	2.9	Not applicable to Braidwood/Byron.
K4.14	Knowledge of AFW System design feature(s) and/or interlock(s) which provide for the following:	AFW automatic isolation	3.5	3.7	Not applicable to Braidwood/Byron.
K5.04	Knowledge of the following theoretical concepts as they apply to the AFW System:	Reason for warming up turbine prior to turbine startup	2.3	2.5	Not applicable to Braidwood/Byron.

Viewed KA	Category Statement	KA Statement	RO Value	SRO Value	Suppress Basis
071000	*Waste Gas Disposal System (WGDS)*				
A4.16	Ability to manually operate and/or monitor in the control room:	Waste gas decay tank shifts	2.5	2.2	Braidwood and Byron control rooms do not contain equipment or instrumentation to monitor or perform gas decay tank shifts.
076000	*Service Water System (SWS)*				
K1.09	Knowledge of the physical connections and/or cause-effect relationships between the SWS and the following systems:	Reactor building closed cooling water	3.0	3.1	Not applicable to Braidwood/Byron.
K2.04	Knowledge of bus power supplies to the following:	Reactor building closed cooling water	2.5	2.6	Not applicable to Braidwood/Byron.
K3.03	Knowledge of the effect that a loss of the SWS will have on the following:	Reactor building closed cooling water	3.5	3.9	Not applicable to Braidwood/Byron.
K4.01	Knowledge of SWS design feature(s) and/or interlock(s) which provide for the following:	Conditions initiating automatic closure of closed cooling water auxiliary building header supply and return valves	2.5	2.9	Not applicable to Braidwood/Byron.
078000	*Instrument Air System (IAS)*				
K1.05	Knowledge of the physical connections and/or cause-effect relationships between the IAS and the following systems:	MSIV air	3.4	3.5	Not applicable to Braidwood/Byron.
K2.02	Knowledge of bus power supplies to the following:	Emergency air compressor	3.3	3.5	Not applicable to Braidwood/Byron.
086000	*Fire Protection System (FPS)*				
A1.02	Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the FPS controls including:	Fire water storage tank level	3.0	3.2	Not applicable to Braidwood/Byron.
A4.04	Ability to manually operate and/or monitor in the control room:	Fire water storage tank makeup pumps	3.4	3.3	Not applicable to Braidwood/Byron.
K1.01	Knowledge of the physical connections and/or cause-effect relationships between the FPS and the following systems:	High-pressure service water	3.0	3.4	Not applicable to Braidwood/Byron.
103000	*Containment System*				
A4.09	Ability to manually operate and/or monitor in the control room:	Containment vacuum system	3.1	3.7	Not applicable to Braidwood/Byron.
K1.03	Knowledge of the physical connections and/or cause-effect relationships between the Containment System and the following systems:	Shield building vent system	3.1	3.5	Not applicable to Braidwood/Byron.

Viewed KA	Category Statement	KA Statement	RO Value	SRO Value	Suppress Basis
K4.01	Knowledge of Containment System design feature(s) and/or interlock(s) which provide for the following:	Vacuum breaker protection	3.0	3.7	Not applicable to Braidwood/Byron.

Braidwood Exam Author

Byron Exam Author

N/A

Braidwood Facility Representative

Byron Facility Representative

N/A

Braidwood
Outline Review NRC Comments/ LIC Response
3/29/02

WRITTEN:

1. NRC: What computer program do you use to randomly select KAs?
LIC: Skyscraper program same one used for last exam.
2. NRC: Were any KAs suppressed/rejected?
LIC: Yes. Suppressed KA list submitted.

(Not applicable questions: Were justification statements prepared? Were KAs suppressed/rejected/justified on a case-by-case basis? Which ones? Why? How many? We need to review the suppressed/rejected/justified KA information.)

ADMIN JPMs:

1. Make sure the admin JPMs have significant, verifiable consequences such that if they are performed incorrectly, the task cannot be successfully completed.

2. Make sure JPM meets the KA.

OPERATING JPMs:

General: Want alternate path JPMS to follow guidance in Appendix C, ie, procedurally driven (ARPs or ABNs are good), completes the task or mitigates the problem without reliance on actions by other control room operators...

1. I need to review a list of audit exam JPMs (to verify none of those JPMs are repeated on the NRC exam).

2. Make sure none of JPMs are performed in the scenarios. What about B.1.c (perform emergency boration) and B.1.d (place excess letdown in service)?

SCENARIOS:

1. Verify each scenario has Tech Specs